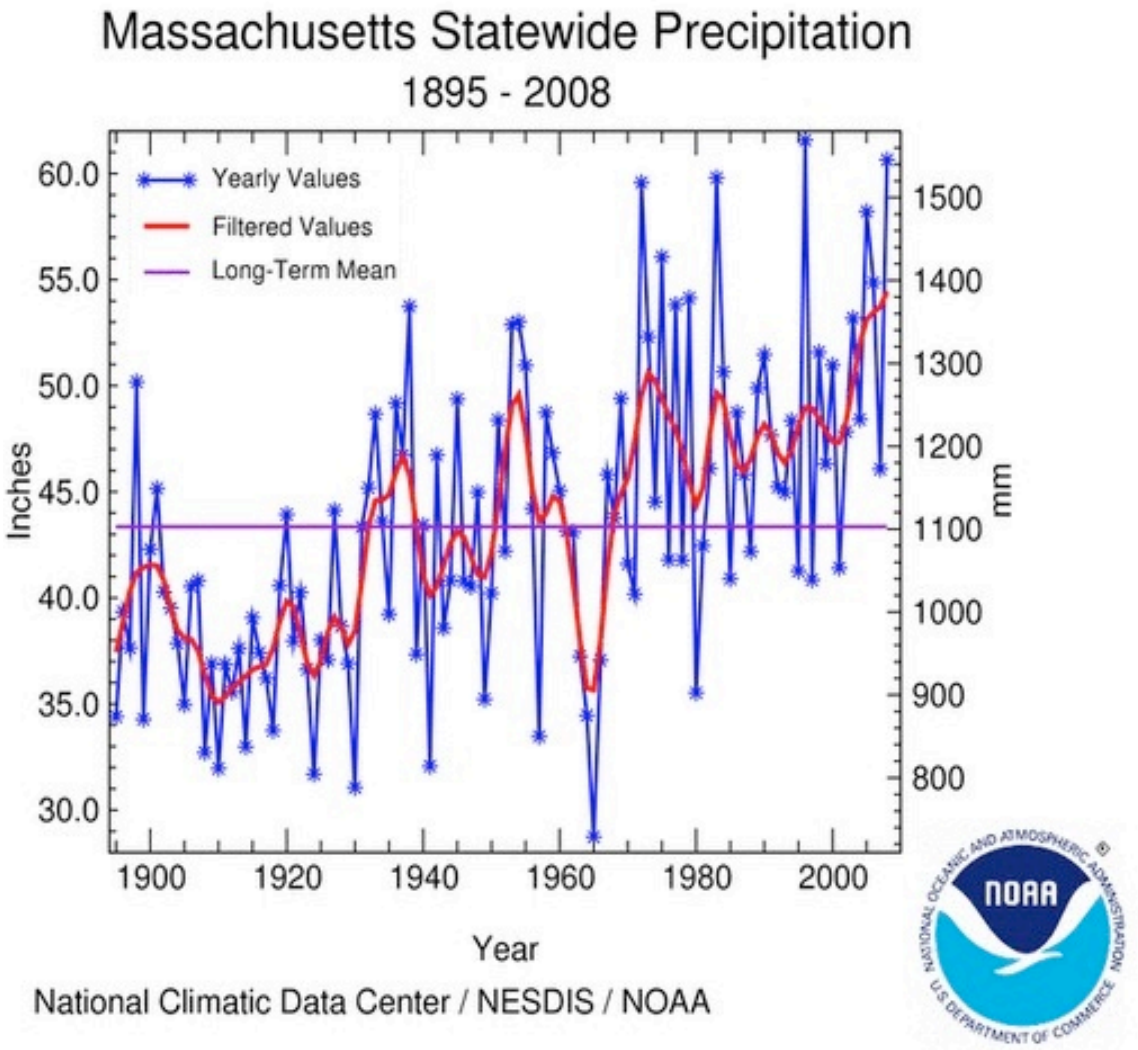
Further Comments on SWMI and Massachusetts Water Policy

by Paul Lauenstein

I am grateful for the effort that state authorities have invested in the Sustainable Water Management Initiative (SWMI) and for the opportunity to comment.

What goes up generally comes down. Or so it could be with precipitation. By sheer coincidence, increasing rainfall over the past century has provided supplementary water to support increasing population and a growing economy in Massachusetts.



What will happen if precipitation drops back to the levels of a century ago, with the current population approximately triple what it was then? What will happen to shallow aquifers already being over-exploited by drinking water wells, many of which already have issues with iron, manganese, nitrates, sulfur, bacteria, and PPCPs (pharmaceuticals and personal care products) too numerous to regulate? Will these contaminants cause health problems and associated health costs as they

become more concentrated with falling water tables? 20% of the streams and rivers in Massachusetts are already severely depleted. What will they be like if the climate becomes dryer without a reduction in water withdrawals?

Shouldn't water policy in Massachusetts be based on the precautionary principle, and mandate a concerted and continuing effort to improve our water use efficiency, particularly considering that water conservation pays for itself in the long run? Setting safe yields consistent with recent research on the relationship between August stream flow and fluvial fish abundance would get us moving in the right direction.

Economical benefits of environmental restoration

Water is so important to New England's economy that the New England Public Policy Center at the Federal Reserve Bank of Boston prepared a research report on it[1]. The report "*identifies New England's small, shallow, porous aquifers (underground stores of water) as the region's major geological impediment to long term water adequacy. To complicate the problem, many of the most rapidly developing areas within the region are those with the most meager water supplies. Furthermore, in New England, as well as throughout the nation, economic development is assuming a form ("sprawl") that significantly reduces the earth's capacity to absorb and retain fresh water.*

"While there is no single clear-cut solution to the region's water problems, there are several pragmatic policy actions that could ameliorate them. Demand management is perhaps the most promising tactic. Aggressive leak detection, greater use of water-saving technologies, and more conservation-friendly rate structures may ease the supply crunch felt throughout New England."

MWRA's cleanup of Boston Harbor is an example of the economic benefits provided by environmental restoration. Businesses are flourishing along Boston's much cleaner waterfront. Cruise ships full of tourists with money to spend now visit Boston. Boating, sailing, kayaking, and even swimming have become popular again. Lobstermen and fishermen harvest seafood that's actually safe to eat. The virtual tour of Boston Harbor at www.youtube.com/watch?v=IXZHY9J4cCM illustrates many of these benefits.

The vitality of marine fisheries for which Massachusetts is famous is intimately connected with and dependent upon the flow of coastal streams. Herring, shad,

[1] Tannenwald, Robert and Turner, Nicholas, Water, Water Everywhere: Dare I Drink a Drop?, New England Public Policy Center at the Federal Reserve bank of Boston, 2005

smelt and eels all depend on adequate flow in coastal rivers, and so do coastal estuaries that support the marine food web. Thanks to successful conservation efforts and leak repairs over the past two decades, MWRA is in a position to use its storage capacity to provide supplementary water in stressed coastal basins such as the Ipswich, the Weymouth/Weir, the Taunton and the Neponset, among others.

Like Joseph in Egypt, we should anticipate future drought conditions by encouraging water conservation now. Continuous improvement in water use efficiency is the best way to prepare for the next drought. Conservation keeps the cost of water supply in check–a significant benefit, given today's challenging economic conditions. Conservation also improves drinking water quality, minimizes sewage spills and reduces greenhouse gas emissions.

The most cost-effective way to promote water conservation is through full-cost, conservation-oriented water rates. By requiring towns to adopt water rates that cover the full cost of water supply including mitigation of environmental impacts, the state could provide municipal officials with political cover to increase rates to fund necessary infrastructure improvements. This requirement should be viewed as a self-funded mandate because water conservation is typically the least expensive "source" of water, and pays for itself over time by reducing the long-term cost of water supply. Also, by uniformly requiring conservation-oriented rate structures, the state can accelerate improvement in water use efficiency, which, in turn, helps protect public water resources that generate billions of dollars worth of ecosystem services in Massachusetts every year. Full-cost, conservation-oriented water rates should be required as a condition of every Water Management Act (WMA) permit and registration.

In addition, educating water customers about the water rates to which they are subject heightens their awareness and amplifies their conservation efforts. This can be accomplished cheaply by means of water bill inserts.[2]

Six guidelines for conservation-oriented water rates

Following are six guidelines for conservation-oriented residential water rates:

1. Water rates should be high enough to cover the full cost of water supply, including such things as rebates for efficient plumbing fixtures, conservation education, stormwater recharge systems, purchase of land or conservation easements for wellhead protection, etc.[3] Irrigation restrictions, inferior drinking

[2] Gaudin, S., Effect of Price Information on Residential Water Demand, Applied Economics, 2006, 38, 383-393

[3] Massachusetts Water Conservation Standards, Section 4, page 15

water quality, and desiccated streams and wetlands are all signs that water rates should be increased.

2. There should be a minimum of three rate blocks, which should correspond to water usage by the majority of water customers. The top rate block should kick in at or below 90,000 gallons per household per year, the benchmark used in the MWRA Advisory Board's Annual Water and Sewer Retail Rate Survey.

3. Water rates should be steeply ascending, with the top block rate at least double the lowest block rate, in order to provide water for essential domestic use at an affordable rate, while discouraging profligate use for non-essential purposes.

4. Each block rate, especially the highest block rate, should be significantly higher (at least 20%) in summer than in winter (note: implementation of seasonal water rates requires a radio meter reading system in order to read all the meters in one day at the beginning and the end of the summer season).

5. Fixed account fees that do not vary with water usage should be kept to a minimum (i.e. revenues from fixed account fees should account for not more than 10% of total water bill revenues), because the fixed component of the water bill does nothing to encourage conservation.

6. Water should be considered a public asset, regardless of whose land it happens to flow under. To prevent a rash of private well drilling in response to higher water rates that reflect the full cost of water, all lawn irrigation systems should be subject to the same restrictions and bans regardless of whether they use water from private or municipal sources. Private well owners should also be required to install water meters and report usage to DEP on an annual basis. This would provide water use statistics needed by DEP to determine whether Safe Yield limits required by the Water Management Act are being exceeded.

The top block rate for commercial water usage could be lower than the top block rate for residential use in consideration of the fact that businesses pay local taxes but do not directly incur public education costs. However, the top residential block rate should apply to businesses that use water for cosmetic lawn irrigation.

Full-cost, conservation-oriented water rates should be required in every WMA permit and registration. DEP should also make changes to regulations that would allow them to condition registrations, and require application of these pricing principles even in communities with registrations only.

Third party determination of safe yield

Conservation measures are only needed in the event that water withdrawals exceed environmentally protective limits. Unfortunately, DEP has proposed safe yield withdrawal limits that are higher than current withdrawals in all major basins, which implies that conservation is unnecessary.

DEP has a long history of avoiding determination of safe yield limits that would protect the environment from excessive water withdrawals. DEP originally issued WMA registrations and permits without first determining safe yield limits as required by the Water Management Act. Two decades later, with the original permits expiring, a court ordered DEP to determine safe yield limits before reissuing them. In October 2009, DEP attempted to satisfy the court order with grossly inflated safe yield determinations. The following month, in response to an outcry from the environmental community and criticism by the media and the Governor, DEP withdrew their inflated safe yields, and issued a Statement of Clarification of Safe Yield, which declared that Safe Yield interpretation includes environmental protection factors, including ecological health of river systems, as well as hydrologic factors.[4] However, the safe yield determinations proposed in the SWMI draft framework on February 3, 2012, purportedly based on science,[5] fail to live up to the Statement of Clarification of Safe Yield. These new safe yields are functionally equivalent to the safe yields that were rejected in 2009 because they exceed current withdrawals in all 30 major basins,[6] despite the fact that many of those basins are stressed. The new safe yields are approximately three times higher than the 25% of August median flow indicated by science as the maximum that can be withdrawn without degrading streams to Flow Category 4 or 5 (on a scale of 1 to 5).[7] Continuously withdrawing so much water would cause rivers and streams to dry up for months at a time.[8]

The resistance to implementation of the safe yield requirements of the Water Management Act by state authorities over the past quarter century demonstrates a consistent bias for accommodating ever-increasing water withdrawals, rather than protecting water resources that provide an array of highly valuable ecosystem services other than water supply. In order to protect the environment from

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[4] MassDEP Statement of Clarification of Safe Yield, November 3, 2009, http://www.mass.gov/dep/water/resources/safeyield.htm

[5] Statement by MassDEP Commissioner Ken Kimmell in a Boston Globe article entitled Winter Drought, Craving April Showers, by David Abel, March 31, 2012

[6] Draft Massachusetts Sustainable Water Management Initiative Framework Summary, February 3, 2012, page 5

[7] Sustainable Water Management Initiative Presentation Outline, February 3, 2012, page 7

[8] Kerry Mackin, personal communication, March 6, 2012

excessive withdrawals, the task of determining safe yield limits for the major basins in Massachusetts should be delegated to an unbiased and qualified third party, with a mandate to determine safe yield withdrawal limits that are consistent with DEP's Statement of Clarification of Safe Yield.

Setting truly safe and protective safe yield withdrawal limits at levels consistent with the best available science would steer us away from ever-increasing withdrawals of our finite water resources, and redirect our efforts toward improving our water use efficiency and taking greater advantage of MWRA's water storage capacity to alleviate environmental stress. It would encourage us to prepare for inevitable future droughts, and move us toward a better, more sustainable balance between human and environmental water use for the benefit of present and future generations.

Actual results were inconceivable to those projecting MWRA's future demand in 1986.